CLAIMS

1. A buffer structure for storing symbols received via a plurality of channels, wherein each channel is associated with a particular time interval over which the received symbols are subsequently processed, the buffer structure comprising:

a buffer partitioned into a plurality of sections, wherein one section is assigned to each channel and dimensioned to store symbols expected to be received over the associated time interval; and

an address generator coupled to the buffer and operative to provide addresses for writing symbols to the assigned sections.

2. The buffer structure of claim 1, wherein each section is operated as a circular buffer.

3. The buffer structure of claim 1, wherein each channel corresponds to a physical channel defined by W-CDMA standard.

4. A buffer structure for storing symbols received via a plurality of channels, wherein each channel is associated with a particular time interval over which the received symbols are subsequently processed, the buffer structure comprising:

a buffer partitioned into a plurality of sections, one section for each channel, wherein the plurality of sections are assigned to the plurality of channels based on the associated time intervals; and

an address generator coupled to the buffer and operative to provide addresses for writing symbols to the assigned sections.

5. The buffer structure of claim 4, wherein each channel corresponds to a transport channel defined by W-CDMA standard.

6. The buffer structure of claim 5, wherein the time interval associated with each channel corresponds to a transmission time interval (TTI) defined by the W-CDMA standard.

7. The buffer structure of claim 4, wherein the time interval associated with each channel is selected from a group consisting of 10 msec, 20 msec, 40 msec, and 80 msec.

8. The buffer structure of claim 4, wherein the plurality of sections are assigned to the plurality of channels in descending order of the associated time intervals.

9. The buffer structure of claim 4, wherein the buffer is partitioned and assigned prior to the start of each shortest time interval.

10. The buffer structure of claim 4, wherein the buffer is partitioned starting from an initial location and continuing along a first direction of the buffer.

11. The buffer structure of claim 10, wherein each section is defined starting from the initial location or the end of a previous section.

12. The buffer structure of claim 4, wherein each section is sized to store all symbols expected to be received within the time interval associated with the channel to which the section is assigned.

13. The buffer structure of claim 4, wherein the plurality of channels include a first group of one or more channels and a second group of one or more channels, wherein one or more sections assigned to the one or more channels in the first group are defined starting from a first initial location and continuing along a first direction of the buffer, and wherein one or more sections assigned to the one or more channels in the second group are defined starting from a second initial location and continuing along a second direction of the buffer.

14. The buffer structure of claim 13, wherein the first and second initial locations are selected as a common location, and wherein the first and second directions are opposite directions.

15. The buffer structure of claim 4, wherein the address generator is operative to maintain a write pointer for each assigned section.

16. The buffer structure of claim 15, wherein the address generator is further operative to maintain a start location for each assigned section.

17. A buffer structure for storing symbols received via a plurality of transport channels, wherein each transport channel is associated with a particular transmission time interval (TTI), the buffer structure comprising:

a buffer partitioned into a plurality of sections, one section for each transport channel, wherein the plurality of sections are defined starting from an initial location and continuing along a first direction of the buffer, and wherein the plurality of sections are assigned to the plurality of transport channels in descending order of the associated TTIs; and

an address generator coupled to the buffer and operative to provide addresses for writing symbols to the assigned sections.

18. A receiver unit operative to process symbols received via a plurality of channels in a communication system, wherein each channel is associated with a particular time interval over which the received symbols are subsequently processed, the receiver unit comprising:

a channel processor operative to process samples received for the plurality of channels to provide symbols;

a buffer coupled to the channel processor and operative to store the symbols from the channel processor, wherein the buffer is partitioned into a plurality of sections, one section for each channel, and wherein the plurality of sections are assigned to the plurality of channels based on the associated time intervals; and

a data processor coupled to the buffer and operative to retrieve symbols for a particular traffic from an assigned section of the buffer and to process the retrieved symbols.

19. The receiver unit of claim 18, wherein each channel corresponds to a transport channel defined by W-CDMA standard, and wherein the time interval associated with each channel corresponds to a transmission time interval (TTI) also defined by the W-CDMA standard.

20. The receiver unit of claim 18, wherein the buffer is partitioned starting from an initial location and continuing along a first direction of the buffer.

21. The receiver unit of claim 18, wherein the plurality of channels includes a first group of one or more channels and a second group of one or more channels, wherein one or more sections assigned to the one or more channels in the first group are defined starting from a first initial location and

continuing along a first direction of the buffer, and wherein one or more sections assigned to the one or more channels in the second group are defined starting from a second initial location and continuing along a second direction of the buffer.

22. The receiver unit of claim 18, wherein the symbols from the channel processor are stored to permutated locations in the buffer to achieve a second de-interleaving.

23. The receiver unit of claim 18, wherein symbols for a particular traffic are retrieved from permutated locations in the assigned section to achieve a first de-interleaving.

24. The receiver unit of claim 18, further comprising:

an address generator coupled to the buffer and operative to provide addresses for writing symbols to the plurality of sections.

25. The receiver unit of claim 18, further comprising:

a controller coupled to the channel processor and the data processor, the controller operative to direct writing of symbols to the plurality of sections and reading of symbols from the plurality of sections.

26. The receiver unit of claim 18, further comprising:

a decoder coupled to the data processor and operative to receive and decode symbols processed by the data processor.

27. A receiver unit comprising the channel processor, buffer, and data processor of claim 18, and further operative to process a downlink data transmission in accordance with W-CDMA standard.

28. A receiver unit comprising the channel processor, buffer, and data processor of claim 18, and further operative to process an uplink data transmission in accordance with W-CDMA standard.

29. A method for storing symbols received via a plurality of channels, wherein each channel is associated with a particular time interval over which the received symbols are subsequently processed, the method comprising:

identifying the plurality of channels to be received and processed;

determining a time interval associated with each channel;

assigning a plurality of sections of a buffer to the plurality of channels in accordance with the associated time intervals; and

storing symbols received from the plurality of channels to the plurality of assigned sections.

30. The method of claim 29, wherein each channel corresponds to a transport channel defined by W-CDMA standard, and wherein the time interval associated with each channel corresponds to a transmission time interval (TTI) also defined by the W-CDMA standard.

31. The method of claim 29, wherein the assigning includes

ranking the plurality of channels according to the associated time intervals,

selecting a channel associated with a longest time interval and not yet assigned a section of the buffer,

allocating a next available section of the buffer to the selected channel, wherein the next available section is defined from a start location or an end of a preceding allocated section, and

repeating the selecting and allocating for the plurality of channels.

32. The method of claim 31, wherein the assigning further includes

determining the size of a traffic to be received on the selected channel, and

wherein the next available section allocated to the selected channel is defined based on the determined traffic size.

33. The method of claim 29, wherein the plurality of sections are defined starting from an initial location and continuing along a first direction of the buffer.

34. The method of claim 29, further comprising:

grouping the plurality of channels into a first group of one or more channels and a second group of one or more channels, and

wherein the assigning includes

first assigning one or more sections defined along a first direction of the buffer to the one or more channels in the first group in accordance with the associated time intervals, and

second assigning one or more sections defined along a second direction of the buffer to the one or more channels in the second group in accordance with the associated time intervals.

35. The method of claim 34, wherein the first and second groups of one or more channels are associated with first second coded composite transport channels (CCTrCHs), respectively, defined by W-CDMA standard.